

Remarks

Applicant respectfully requests further examination and reconsideration in view of the above amendment and the arguments set forth fully below. There is no new matter contained in the claims as amended.

35 U.S.C. 103(a) Rejection

Within the Office Action, claims 1, 8-16, 19, 20, 23, 25, 27-30 and 40-45 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,951,765 to Gopinath et al. (hereinafter “Gopinath”) in view of Japanese Patent No. 7-24679 (hereinafter “Japan ‘679”). For the reasons outlined below, the Applicants respectfully traverse the rejections made within the Office Action and submit that the claims, as presented above, are in condition for allowance over Gopinath in view of Japan ‘679.

One basic criteria to establish a prima facie case of obviousness is that the prior art references must teach or suggest all the claim limitations of the present invention. As amended, claims 1, 16 and 30 contain additional limitations not taught by the cited references. Specifically, Gopinath fails to teach a step of post-processing cleaning and rinsing an object using a second chemistry specifically chosen to clean and/or rinse post-processing residue. Within the Office Action, the Examiner notes that Gopinath discloses a “means for injecting a second chemistry . . . wherein the second chemistry is injected through an injection port separate from the means for injecting a processing chemistry into the system”. However, the second chemistry in Gopinath is used for an entirely different purpose than the second chemistry of the Applicant’s present invention, and as amended, claims 1, 16 and 30 contain additional limitations explicitly claiming this novel functionality of the second chemistry.

Gopinath teaches apparatuses and methods of supplying a processing chamber with a supercritical solution of dissolved precursors. The supercritical solution of precursors is a first chemistry. Gopinath also teaches charging “the entire reactor recirculation loop (line 135 and reactor 137) with precursor-free supercritical fluid via inlet 141” (Col. 8, lines 54-62) prior to

injecting the first chemistry into the processing chamber. The precursor-free supercritical fluid comprises a second chemistry. The first chemistry is used to treat an object within the chamber and the second chemistry is used to 'prime' the chamber for the introduction of the supercritical fluid.

On the other hand, the Applicant's present invention teaches an entirely different process. The Applicant's invention teaches a means for injecting a first processing chemistry into the system for supercritical processing and then injecting a second chemistry into the system to clean and rinse the object within the processing chamber. The Examiner states that Gopinath teaches cleaning (Col. 6, lines 7-24) and rinsing (Col. 4, lines 6-10 and Col. 10, line 59) an object, however, Gopinath does not teach post-processing cleaning and rinsing an object. Instead Gopinath teaches using the first chemistry (diluted solutions of precursors as explained at Col. 6, lines 11-12) to "clean" the object. However, this process would not adequately clean the object because the precursor solution would itself leave residue upon the surface of the object.

The requirement that the cleaning and rinsing steps take place post-processing is an important object of the Applicant's present invention. After processing, an amount of process and chemical residue is commonly left on the surface of the object and it is an object of the present invention to clean off this residue. Again, Gopinath teaches using a precursor solution to "clean" an object, but instead further coats the object with residue. Therefore, the Applicant's present invention is not rendered obvious by Gopinath, but rather Gopinath teaches away from the Applicant's present invention. Furthermore, Japan '679 does not teach the additional claim limitations present in claims 1, 16 and 30. Additionally, Claims 2-15, 17-29 and 40-45 each contain this amendment by implication. Therefore claims 1-30 and 40-45 are allowable over Gopinath in view of Japan '679.

Also within the Office Action, claims 2-5, 17 and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gopinath in view of United States Patent No.: 6,782,900 to DeYoung et al. (hereinafter "DeYoung"). However, the Applicants respectfully traverse the rejections made within the Office Action and submit that the claims, as presented above, are in condition for allowance over Gopinath in view of DeYoung.

DeYoung describes a method and apparatus for cleaning and treating a substrate using CO₂. However, like Gopinath and Japan, DeYoung does not describe a post-processing step cleaning or rinsing the object with a second chemistry such as a cleaning chemistry or a rinsing chemistry. For at least this reason, Gopinath in DeYoung do not render the Applicant's invention obvious.

Also within the Office Action, claims 6, 7, 21, 22, 24 and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gopinath in view of United States Patent No.: 5,620,524 to Fan et al. (hereinafter "Fan"). However, the Applicants respectfully traverse the rejections made within the Office Action and submit that the claims, as presented above, are in condition for allowance over Gopinath in view of DeYoung.

Fan describes a dual plunger system for continuous and pulse-free delivery of reagents for semiconductor processing. However, like Gopinath, Japan and DeYoung, Fan does not describe a post-processing step cleaning or rinsing the object with a second chemistry such as a cleaning chemistry or a rinsing chemistry. For at least this reason, Gopinath in DeYoung do not render the Applicant's invention obvious.

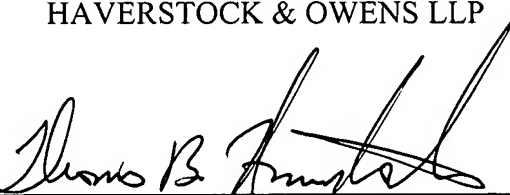
CONCLUSION

Prior to the Office Action, Claims 1-30 and 40-45 were pending. Claims 1, 2, 4, 12, 13, 16, 17, 19 and 30 are currently being amended. Therefore, claims 1-30 and 40-45 are pending.

As shown by the preceding arguments, neither Gopinath, Japan '679, DeYoung nor Fan disclose the limitations now present in claims 1, 16, and 30 of Applicant's invention. Also, claims 2-15, 17-29 and 40-45 contain the limitations by reference. Furthermore, as shown above, the novel features of the invention would not have been obvious to one normally skilled in the art at the time of the invention. Therefore, the Applicant believes all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes that a telephone conference would expedite prosecution of this application, the Examiner is encouraged to contact the undersigned at (408) 530-9700.

Respectfully submitted,

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CERTIFICATE OF MAILING (37 CFR § 1.8(a))

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Date: 11-16-07 By: Alicia Ferrera